

REMARKS

Reconsideration of the application is respectfully requested in view of the above amendment and the comments that follow. Entry of the foregoing amendment is requested in order to place this application in condition for allowance or in better form for consideration on appeal.

Claims 26, 27 and 33 have been canceled due to incorporation of the subject matter thereof into claims 1 and 2.

The final rejection of claims 1-13, 16-22, 24-34 and 37-39 under 35 U.S.C. 103(a) as being unpatentable over Okamoto ('669) in view of Sievers et al. ('093) is respectfully traversed.

Contrary to the contention of the Examiner in the Office Action, the primary reference, Okamoto, does not disclose, suggest or exemplify Applicants' claimed process for decomposing an asymmetric metallocene precursor. Okamoto discloses metal-organic vapor-phase epitaxy using an organic ruthenium compound having two 5-membered rings. The two 5-membered rings can be substituted with at least one alkyl group selected from CH_2CH_3 , $\text{CH}_2\text{CH}_2\text{CH}_3$, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$, $\text{C}(\text{CH}_3)_3$, $\text{CH}_2(\text{C}_6\text{H}_5)$, COCH_3 , COOCH_3 , and CH_2OCH_3 . Note that CH_3 is excluded as a permissible alkyl group.

This substitution pattern is exemplified by Okamoto in several embodiments. See, for example, column 4, line 61 through column 7, line 57. The organic ruthenium embodiments are as follows:

Embodiment 1 – bis(ethylcyclopentadiene)ruthenium. This compound is symmetric. The two cyclopentadienyl groups are both substituted with ethyl.

Embodiment 2 – bis(benzyl)(cyclopentadienyl)ruthenium. This compound is symmetric. The two cyclopentadienyl groups are both substituted with benzyl.

Embodiment 3 – bis(t-butylcyclopentadiene)ruthenium. This compound is symmetric. The two cyclopentadienyl groups are both substituted with t-butyl.

Embodiment 4 – bis(propylcyclopentadiene)ruthenium. This compound is symmetric. The two cyclopentadienyl groups are both substituted with propyl.

Embodiment 5 – acetyl ruthenocene. This compound is asymmetric, however, only one cyclopentadienyl group is substituted with acetyl.

Embodiment 5 (comparative) – bis(cyclopentadienyl)ruthenium. This compound is symmetric, however, the two cyclopentadienyl groups are both unsubstituted.

Embodiment 5 (comparative) – bis(pentamethylcyclopentadienyl)-ruthenium. This compound is symmetric. The two cyclopentadienyl groups are both fully substituted with methyl.

Embodiment 5 (comparative) – bis(methylcyclopentadiene)ruthenium. This compound is symmetric. The two cyclopentadienyl groups are both substituted with methyl.

As can be seen from the above embodiments of Okamoto, nowhere does Okamoto even remotely disclose, suggest or exemplify asymmetric metallocene precursors used in deposition processes as claimed by Applicants and the unexpected advantages resulting therefrom. Okamoto actually teaches away from Applicants' claimed invention by disclosing and exemplifying only symmetric compounds or compounds in which only one 5-membered ring is substituted.

Clearly, it is only by hindsight that the Examiner could impute to the compounds disclosed and exemplified by Okamoto an asymmetric substitution pattern involving two substituted cyclopentadienyl or cyclopentadienyl-like rings to arrive at the instantly claimed process for decomposing asymmetric metallocene compounds, and such hindsight obviousness after the invention has been made is not the proper test. See In re Carroll 601 F2d 1184, 202 USPQ 571.

The secondary reference, Sievers et al., adds nothing to make up for the deficiencies of Okamoto. Sievers et al. discloses a method for depositing a film of a desired material on a substrate by dissolving at least one reagent in a supercritical fluid comprising at least one solvent. Sievers et al. is even more remotely removed from Applicants' claimed invention than Okamoto. Nowhere does Sievers et al. even remotely disclose, suggest or exemplify asymmetric metallocene precursors used in

deposition processes as claimed by Applicants and the unexpected advantages resulting therefrom.

The final rejection of claims 14, 15, 35 and 36 under 35 U.S.C. 103(a) as being unpatentable over Okamoto ('669) in view of Sievers et al. ('093) and further in view of Soininen et al. ('740) is respectfully traversed.

The primary reference, Okamoto, and the secondary reference, Sievers et al., have been discussed above. The other secondary reference, Soininen et al., adds nothing to make up for the deficiencies of Okamoto and Sievers et al. Soininen et al. discloses a method for depositing a metal oxide thin film on a substrate surface and thereafter reducing the metal oxide thin film into a metallic form with an organic reducing agent. As with Sievers et al., Soininen et al. likewise is even more remotely removed from Applicants' claimed invention than Okamoto. Nowhere does Soininen et al. even remotely disclose, suggest or exemplify asymmetric metallocene precursors used in deposition processes as claimed by Applicants and the unexpected advantages resulting therefrom.

It is respectfully submitted that the final rejections of record are improper and that the application is in condition for allowance. Accordingly, reconsideration and allowance of all claims are courteously solicited.

A response to the Office Action mailed December 11, 2007 was due March 11, 2008. Accordingly, submitted herewith is a petition for an extension of time for one (1) month. Please charge fees/surcharge which may be required by this paper, or credit any overpayment, to Deposit Account No. 16-2440.

Respectfully submitted,

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